

## 14\_29 Profile Grade Point Station Used by PGL Chains

### Question:

I am using PGL chains to draw cross sections. Why are the cross section grade point elevations not matching the proposed profiles?

### Answer:

This is a common mistake Designers make when using PGL chains in Criteria. The way the shape clusters are defined determines which profile station is applied. Here is the COGO data for cross section 190+00 - L-.

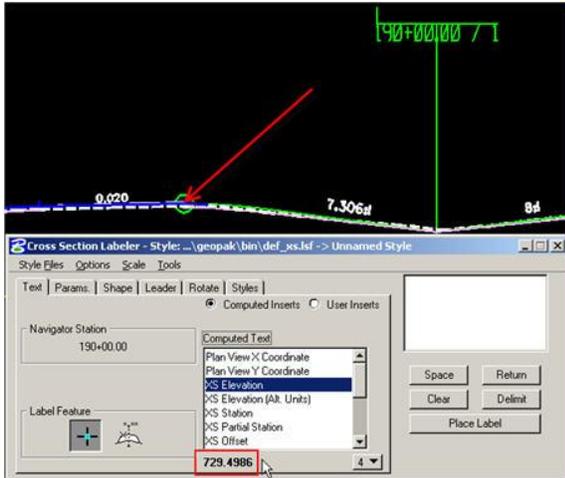
* 1 LAY OFF TO CHA LL CHA L STA 190+00			
STATION ON L	OFFSET DIST	STATION ON LL	DIRECTION FROM POINT TO LL
190+00.00	41.9974	189+81.83	S 87° 51' 25.60" W
* 2 LAY OFF TO CHA LR CHA L STA 190+00			
STATION ON L	OFFSET DIST	STATION ON LR	DIRECTION FROM POINT TO LR
190+00.00	-42.0022	190+18.13	N 87° 51' 25.62" E
* 3 EL PRO LLPRO 189+81.83			
Elev at 189+81.83	=	729.7730	grade = -1.5100, On tang betw 12 & 13
* 4 EL PRO LRPRO 190+18.13			
Elev at 190+18.13	=	729.1426	grade = -1.5352, On tang betw 12 & 13
* 5 EL PRO LLPRO 190+00			
Elev at 190+00.00	=	729.4986	grade = -1.5100, On tang betw 12 & 13
* 6 EL PRO LRPRO 190+00			
Elev at 190+00.00	=	729.4209	grade = -1.5352, On tang betw 12 & 13

You have -L-, -LL- (left), and -LR- (right) chains and LLPRO and LRPRO profiles. If you defined the shape cluster like below, then LLPRO profile station is off the -L- baseline, 190+00. **This is incorrect.**

### CRITERIA FOR SHAPE CLUSTER

SHAPE CLUSTER BASELINE = L  
SHAPE CLUSTER PROFILE = LLPRO  
SHAPE CLUSTER PGL CHAIN = LL

The way Criteria reads this shape cluster definition is to apply profile LLPRO to the station off baseline L, which is 190+00 and an **undesired** grade point elevation of 729.4986' (exactly matches the COGO data)

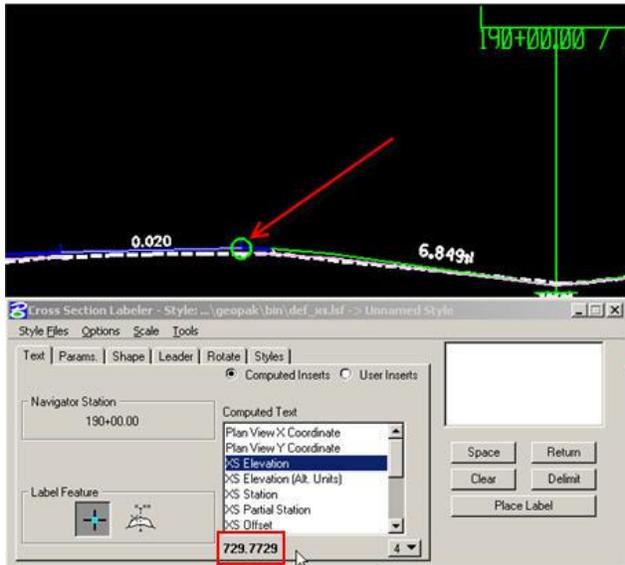


What is desired is at cross section 190+00 -L-, the grade point elevation on the left shape cluster should be 729.7730' (LLPRO profile and corresponding -LL- baseline station of 189+81.83). To do this, first set the Geopak shapes to have the same parameters as this shape cluster definition.

#### CRITERIA FOR SHAPE CLUSTER

SHAPE CLUSTER BASELINE = LL  
 SHAPE CLUSTER PROFILE = LLPRO  
 SHAPE CLUSTER PGL CHAIN = LL

Processing the modified shape file and Criteria input file now yields the desired grade point elevation, ~ 729.7730'. See COGO data above for confirmation.



It is important to note that the shape cluster profile is applied to the stationing of what is defined in shape cluster baseline statement. For PGL chains with there own profiles, it is **never** the centerline or the baseline of the green cross section cell, e.g. L.